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I. P. 302

POTENTIAL VULNERABILITIES

OF THE

EAST GERMAN RAILWAYS

23 JUNE 1952

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The entire East German economy is vulnerable to loss of production and to plan failure through the Reichsbahn, - the Soviet Zone railway system. The Reichsbahn is particularly vulnerable to reductions in traffic because it is operating virtually at maximum capacity; since the intensity of current operations has already taken up most of the "slack" in the system, any reduction of facilities will reduce traffic output more or less seriously. Although this makes almost every facet of railroad operations potentially vulnerable, few of these afford practical bottlenecks for the critical reduction of traffic by covert action. The major aspects of railroading are listed below, not according to their individual vulnerabilities, but according to the vulnerability to which their attack would expose the entire system. (Because it is almost as difficult to attack low-value targets as high, it is recommended that low-value targets be passed over.)

Low Value Targets

Locomotive inventory

Freight car inventory

Manpower

Coal supply

Rail supply

Tie supply

Spare parts supply

Materials supply

Stations, offices, etc.

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(To attempt direct action against individual locomotives, cars, key personnel, or ~~the~~ basic supplies would be impractical because units are numerous and widely dispersed, because availability of replacements probably exceeds the present ability to attack, and because the volume of traffic loss expectable per action, is too small. Locomotive fuel is also a poor target: coal is produced and stored in too many separate places to make its dissipation in critical volumes a practical project.

Even less effective than the covert, direct-action destruction of a locomotive or box car, would be such covert, direct-action devices as mis-directing freight cars or sabotaging journal boxes to increase the incidence of hot boxes. See Appendix I, "Negative Recommendations".)

High Value Targets

Classification yards

Signal installations

Workshops

The "Chain of Control"

Lines and bridges

1. Classification Yards

The capacity of the Reichsbahn to move traffic varies directly with the capacity of the sum of its terminals and classification yards

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to despatch and receive freight cars. The chief East German yards are hump yards, with automatic switching and braking equipment, which have the capacity of handling 2,500 to 4,000 cars per day. Non-hump yards handle about 500 to 750 cars daily. Damage to control installations in the ten most important hump yards, 4 of which are in Berlin, should temporarily reduce the entire Reichsbahn trafficability by from 25 to 50 percent.

## 2. Signal System

Without the block signal system on major lines and the C.T.C. (centralized traffic control) system in the Berlin area (possibly in the Halle-Leipzig area as well), the Reichsbahn could not possibly support the present level of traffic. Like other potential bottlenecks, the signal system is a greatly dispersed target and will be difficult to attack. However, the C.T.C. system in the Berlin area is controlled from a few central panels, damage to which would reduce traffic in the metropolitan area 25 to 50 percent, and would back up into selected areas of the economy, where metropolitan traffic originates. (The location of Reichsbahn C.T.C. panels, and of the basic control installations of the block signals is not known in S/FR, but this information must be available either in Munich or West Berlin.)

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### 3. Workshops

Locomotive shops are more complicated and less numerous than car shops, <sup>and</sup> the equipment is more specialized and more difficult to repair and replace. *Therefore they make the better target.*

Destruction of major installations in all 12 of the locomotive shops would reduce serviceable locomotives by about 18 units per day. It would require 16 days of complete blockage in these shops to reduce the serviceable inventory 10 percent, and it is likely that in that time, some of the installations could be repaired or replaced. However, damage to the 4 biggest locomotive shops would reduce shop capacity by about 50 percent.

Car shops are even less of a target system. All 20 of the shops would have to be completely blocked for 40 days to yield a 10 percent reduction of working inventory. Complete blockage of all the shops would be very difficult to achieve, and the easier recoverability of car shops would make it almost impossible to keep them out of service for 40 days.

Chief potential bottlenecks within the workshops are the machines.

Destruction of a few basic machines <sup>each of</sup> in the 12 locomotive workshops would reduce the productivity of each shop; destruction of the same

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machine<sup>7</sup> in several shops would prevent "farming out" of certain functions between shops and would heighten the reduction of output.

(Approximately 18 locomotives and 220 freight cars enter and depart the workshops daily; serviceable inventories total approximately 6,000 locomotives and 85,000 freight cars. Daily workshops production represents approximately 1/5 of 1 percent of the serviceable car park and 1/3 of one percent of the loco park.)

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TABLE I

REICHSEISENAUSBESSERUNGSWERKE  
(East German Railway Workshops)

Location

For Locomotives

Stendal\*  
Meiningen  
Chemnitz  
Zwickau\*

For Locos and Freight Cars

Dessau\*  
Halle  
Cottbus\*  
Halberstadt  
Rostock  
Berlin-Kruenowald  
Berlin-Tempelhof  
Leipzig-Engelsdorf  
Brandenburg-West

For Freight Cars

Graefswald  
Gotha  
Jena  
Dresden  
Wittenberge  
Dallitzsch  
Eberswalde  
Potsdam  
Malchin (Mecklenburg)  
Berlin-Warschauerstr  
Magdeburg-Salbkke

\* Most important locomotive shops

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4. "Chain of Control"

This is an over-all designation for several possible areas of vulnerability, including the railway inter-communications system, through which orders are relayed and the several publications used in planning and controlling traffic.

Because any failure in the communications system can be immediately perceived and rapidly repaired, this target will be passed over. Of the several publications that are essential to the planning and controlling of traffic, several lend themselves to a counterfeiting which could cause considerable confusion before being uncovered. <sup>Some</sup> ~~Two~~ of these are:

A. The Buchfahr plan, a manual of operating timetables which lists the schedules of arrivals and departures of all trains at all stations. The maximum permissible operating speeds, gross and net loads allowed, and minimum braking power, are stipulated.

It may be possible to counterfeit some Buchfahrplaener, giving excessive speed, insufficient braking requirements, and/or conflicting schedules which could cause tie-ups or accidents.

B. The Fahrplanblatt, a graphic timetable, giving similar information to that in the Buchfahrplan. This publication would be more difficult

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*successfully*  
to counterfeit, because the bogus schedules might be more quickly apparent when charted in graphic form.

C. The "La" Booklets, which list slo.-down sections, etc. on open lines.

*might*  
Other official Reichsbahn documents, which ~~may~~ prove useful in counterfeiting, include:

- Car Order Books
- Dispatch Sheets
- Car Park Index
- Car Shipping and Receiving Records
- Clearing Cards

##### 5. Lines and bridges

There are several overpasses on the new Outer Freight Ring which girdles Berlin. Damage to some of these, preferably one on the northern loop and one on the southern, not only would re-divert rail traffic back through the western sectors of Berlin but also would reduce the capacity for by-passing Berlin and would seriously overload the metropolitan yards and lines. Berlin is the biggest bottleneck in all east European railroads.

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## APPENDIX I

Negative RecommendationsA. Misdirection

Because all rail yards are heavily guarded by civil, railway and political police, it would be difficult for any non-Reichsbahn employee to switch shipping labels or more than a few cars per day, <sup>at the best,</sup> and it would be extremely difficult to maintain a continuing program of switching labels in a given yard for more than a very few days. To be seriously effective against the Reichsbahn, teams of switchers would have to operate at scores of different despatching yards.

It would be much easier for a controlled Reichsbahn employee to switch labels, but few employees would have time to switch labels in significant numbers, and it is certain that any employee would be apprehended very soon after he began the program.

The Reichsbahn loads and despatches more than 25,000 cars per day. It is probable that at least 1/2 of 1 percent (125 cars) are misdirected daily, from error and carelessness. The effect on the economy is <sup>apparently</sup> negligible.

Any project that we can organize will be sporadic and can hardly achieve 125 misdirected units per day before it is apprehended.

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The results will not justify the costs and risk.

B. Hotboxes

Hotboxes are not a recommended target because they are readily recognized, quickly corrected, and cause little loss of traffic. There has been a gradual increase in the incidence of hotboxes due to the intensified utilization of equipment, and all railway personnel have been alerted to watch for them. This will reduce the effectiveness of any program of inducing hotboxes. Because many hotboxes can be corrected without deadlining the car, or even removing it from the train, these phenomena are more of a headache than a serious bottleneck to traffic. It is believed that inducing hotboxes will yield, per action, the smallest reduction of traffic of any of the available target systems.

Hotboxes can be caused by removing either the oil or the packing from axle journal boxes, by diluting the oil, or by adding abrasives to the oil. Probably less than 40 out of 100 cases of induced hotboxes would result in the loss of a full car-day out of service.

A controlled Reichsbahn employee might be able to achieve wholesale hotbox induction by adding sand to journal lubricants in bulk storage; the process might be repeated several times, but it is also

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likely that the sand would be detected before much damage is done.

C. Materials Supply

In 1948, the chief bottleneck to workshops productivity was the acute shortage of parts and materials, wheel rims, tubes, pumps, electric bulbs, steel plates, copper, bronze and babbitt metal, among other items, were in short supply. This shortage became critical after the counter-blockade of East-West trade; however, the blockade lasted long enough for domestic supplies to be established for all these commodities, and materials supply is no longer a serious problem in Reichsbahn workshops. Moreover, because the counter-blockade forced the Reichsbahn to establish autarchic supply for materials and components, it will now be very difficult to restrict availability of these items to the workshops.

MB: Although Soviet bloc railways are attempting to buy some rails, tubes, etc. illicitly in western markets, their need is not - apparently great because they do not offer high prices.

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